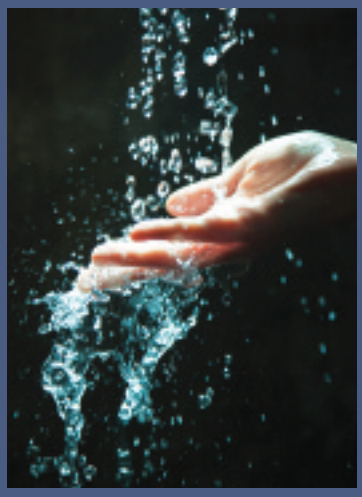
WATER CHALLENGES IN OIL SANDS COUNTRY: ALBERTA'S WATER FOR LIFE STRATEGY

Lorne Taylor



In 2003, the Government of Alberta launched its *Water for Life Strategy* in pursuit of the three interrelated goals of ensuring a safe and secure drinking water supply, improving the health of aquatic ecosystems, and ensuring a sustainable and prosperous economy. Six years later, what has the strategy improved, if anything? Lorne Taylor, who is currently chair of the Alberta Water Research Institute and who fathered the strategy as Alberta environment minister in the early 2000s, presents a report card. Innovation and research will be vital to improving water management practices, especially when it comes to oil sand production, he says, and it will require leadership as well as significant financial investments. Fortunately, he concludes, "the province currently has both, and will reap tangible and meaningful benefits as a result."

Le gouvernement albertain a lancé en 2003 sa stratégie « Water for Life », qui visait trois objectifs interdépendants : sûreté et sécurité de l'alimentation en eau potable, santé des écosystèmes aquatiques, fiabilité et qualité de l'eau pour assurer une économie durable et prospère. Qu'a-t-elle changé ou amélioré en six ans ? Lorne Taylor, actuel président du Alberta Water Research Institute, et parrain de cette stratégie au début des années 2000 à titre de ministre albertain de l'Environnement, en propose un bilan. Selon lui, la recherche et l'innovation sont deux éléments clés pour améliorer les pratiques de gestion de l'eau, surtout dans le domaine des sables bitumineux, ce qui requerra engagement et leadership ainsi que des investissements financiers considérables. Heureusement, conclut-il, « l'Alberta ne manque ni de l'un ni de l'autre, et elle en récoltera des avantages à la fois tangibles et significatifs ».

If you were to ask Canadians what they believe is the most important public policy issue related to water today, many would no doubt say it is a fear that the government is planning to sell Canada's water to the United States or other countries. Others might express concerns about how Alberta's oil sands and other industries are over-using or contaminating water supplies.

In reality, the number one issue related to water in Canada is the urgent need to change how we all think about and manage water today if we are to protect and sustain our water supply for future generations.

Water, along with climate change, is one of the most important and talked about environmental issues of our day. At the same time, it is also a topic that to date has seen more talk than action in Canada, in part because of the perception, or perhaps misperception, that we have an abundant and unlimited supply of fresh water. The truth is Canada does have more water than most countries, but most of Canada's freshwater supplies are located in northern Canada — a place that has one third of our land mass, but less than 1 percent of our population. Therefore, the question remains as to how much of that water is actually available and accessible for our use as drinking water, in agricultural production, for industrial use or for maintaining a healthy ecosystem.

The myth of unlimited water supplies is an extremely dangerous one as it can lead to poor policy decisions that will have a long-term and negative effect on our water supplies. For example, if we believe we have an unlimited bank account, we will continue to spend money like there is no tomorrow. But if you do not have unlimited financial resources, eventually you are going to find yourself bankrupt, and without any way to support yourself in the future.

That is exactly what has happened in recent years in the South Saskatchewan River Basin in Alberta. For years, water allocations and licences were issued based on requests and what was perceived to be an ever-replenishing and abundant supply of water. But over time, water supplies have proven to be less predictable and abundant than they seemed to be in the past. As a result, southern Alberta finds itself dangerously close to being overdrawn at the water bank.

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Today, there is a moratorium on new water allocations in the South Saskatchewan River Basin — an area that serves the most concentrated and growing populations in Alberta, as well as being home to some of the most productive agricultural soils and climates in North America. And while there is not currently a water "crisis" in southern Alberta, there could indeed be one within our generation if we don't start recognizing that changes need to be made on how we both think about and use water.

Another commonly held misconception among Canadians is that the province, people and industry of Alberta value profits over protection of the environment. That is simply not true. Especially when it comes to water.

Alberta, compared to many other jurisdictions, is a leader in environmental management and sustainability. In particular, because of a comprehensive water sustainability strategy that is now guiding water management practices and decision-making in the province, Alberta is considered a world leader in water management.

Water for Life: Alberta's Strategy for Sustainability, launched by the government of Alberta in 2003 following two years of engagement with water stakeholders and users, focuses on three interrelated goals — safe, secure drinking water supplies; healthy aquatic ecosystems; and reliable, quality water supplies for a sustainable and prosperous economy.

To meet those goals, the strategy outlines a number of specific short-, medium- and long-term actions in three core areas of focus — knowledge and research, partnerships and water conservation. But perhaps the most significant thing about *Water for Life* as a public policy is that it is a strategy focused more on the journey than on the specific destination. It is intended to be dynamic, and perhaps never will be completed in the traditional sense of government strategies or plans. As such, *Water for Life* has received international recognition as an excellent example of public policy — both in how it was developed, with full discussion and involvement of key water users and stakeholders, and for its comprehensive and integrated approach to water management and decision-making. Even more, because of the engagement and ownership process used in developing the strategy, there is a shared commitment by government, industry, communities and the non-governmental organizations (NGOs) to ensure its success.

However, the question can be asked: after five years, what has changed or been improved because of the strategy? How can its success be measured in terms of true impact? How effective has Water for Life been in helping Alberta strike the right balance between providing water supplies to both its communities and its industry without compromising the environment, or the sustainability and health of Alberta's water supply?

There are many initial measures of success, not the least of which is the fact that in November 2008, the government of Alberta renewed its commitment to the strategy, announcing specific priorities and new investments directed toward fulfilling the strategy's three core goals. Another notable accomplishment to date is that, in 2009, all of Alberta's major sectors announced a firm commitment through the Alberta Water Council — the multi-stakeholder, consensus-based body set up to oversee and monitor implementation of Water for Life — to have measurable water conservation plans and targets in place within the next two years.

Water users are also starting to take action. In 2006, the Milk River Watershed Council Canada was formed to start studying ways to improve its watershed. In 2008, the council released a *Milk River State of the Watershed Report*, and completed studies on supplemental water supply options and sediment and erosion processes. In partnership with Alberta Agriculture and Rural Development and Alberta Environment, all licensed water users in the Milk River watershed have agreed to install water meters to measure water use in the basin. It is through partnerships like this, where people of goodwill come together to achieve a common goal, that public policy comes to life.

Water for Life is also proving to be successful in driving innovative solutions around water use. An example of this is Petro-Canada's work at its Edmonton refinery. In 2006 Petro-Canada began using Canada's largest membrane-based reuse facility, which has resulted both in a significant reduction in water use by the facility thanks to its ability to recycle and reuse water, and also in a reduction of the contaminants entering the North Saskatchewan

River, which in turn has resulted in improved downstream water quality.

But while much is being done, more needs to be done and soon.

As the Alberta Water Council states in its June 2009 *Review of Implementation Progress of Water for Life, 2006-2008*

> *In the five years since its inception, noticeable progress has been made in the implementation of the strategy, however much of the work involved gathering information, building partnerships and developing plans with agreed-upon goals, outcomes and actions. Overall, this type of information-gathering and planning must begin to shift toward physical, on-the-ground improvements in water management so the strategy can continue to advance.*

One major area where action needs to be accelerated is the examination of Alberta's water allocation system.

Alberta water rights and licences are currently based on first-in-time, first-in-right. In other words, the first to apply has the first right to the water — a policy that does not take use or purpose into account, nor does it address any fluctuations in supply and demand. As well, Alberta's current water allocation system also does not place any relative cost on water rights and use — all licences are the same price regardless of how much water you are either licensed for use, or actually use.

First-in-time, first-in-right is not unique to Alberta, but it is a policy that has served its purpose and time. In light of the current state of Alberta's water supplies, it is no longer an appropriate water management policy.

Another area needing urgent attention relates to perhaps the highest-profile public policy issue in Alberta — water use in oil sands development.

Organizations like Greenpeace and the Sierra Club are convincing Canadians and the world that Alberta's oil sands are a scourge on the environment, and that companies and people who work there, and more so the governments that allow them to exist, don't care about the environment or the future — they just want to make money. But rather than simply buying into the scare tactics of some environmental activists, we need to examine the facts as to what is really happening in the oil sands, and an examination of reality may lead to a different perspective.

Oil sands production — or more specifically extraction — requires water. While conventional crude oil flows naturally or is pumped from the ground, oil sands must be mined or recovered in situ, or "in place." Oil sands recovery processes include extraction and separation systems to remove the bitumen from sand and water. As such, the oil sands operations are licensed to extract significant amounts of water, primarily from the Athabasca River, to be used for that purpose.

As the world's demand for energy continues to grow, more and more companies are making applications to proceed with multi-billion-dollar development projects in northeastern Alberta. What started with one small company in 1967 — the Great Canadian Oil Sands, now known as Suncor — has expanded to four major developments, the footprint of which can now be seen on earth from space, with three or four more proposals in various stages of planning or application.

The pace of this growth is creating understandable concerns, and potential environmental impacts that need to be managed. Alberta's current environmental legislation needs to be reviewed and strengthened in order to do so. And to ensure government leaders can make the right legislative and policy decisions, they need to recognize that an investment in knowledge pays the best interest.

An example of this is a unique public/private partnership between the Alberta Water Research Institute — the research organization created to coordinate the knowledge and research component of Water for Life — and GE Water & Process Technologies. This partnership is designed to share knowledge and best practices, and test innovative technological solutions to help sustain and better manage Alberta's water resources, particularly as they relate to Alberta's oil sands. The flagship project under that agreement is a $15-million project focused on technology aimed at improving the treatment and re-use of industrial produced water in oil sands operations.

Building on GE's proven design and operational experience and broad portfolio of technologies that are already in use in the oil sands, including advanced membranes, thermal evaporation systems, mobile filtration units and water treatment chemistry, the project is expected to reduce energy requirements, costs and water utilization by between 30 and 40 percent.

While work has just begun, the commitment by all parties involved is a strong and important step that like the Petro-Canada initiative, will have a significant impact on both quantity and quality issues related to water use in the oil sands. And as an added bonus, the project will also reduce the greenhouse gases produced by some oil sands operations, as using less water will result in using less energy in the extraction process.

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An even larger water-related issue with the oil sands operations, beyond simply water use, is the tailings ponds of chemical and contaminants that are a side effect of the oil sands extraction process. Tailings ponds are also an area of great environmental concern because of the concentrated amounts

of hazardous chemicals, and the possibilities of contaminating groundwater and surface water supplies.

World-class researchers have begun examining this problem. Dr. Julia Fought is leading a team of researchers at the University of Alberta in a project funded by the Alberta Water Research Institute, to look at how micro-organisms may be able to assist in breaking down the chemical compounds of the tailings ponds and turn them into methane gas. The research shows this is possible and is happening, but now researchers are investigating whether the process may be accelerated or increased in scope and impact.

The pursuit of innovative solutions and the investment in research are two vital keys to improving water management practices in all sectors, but require significant commitment by decision-makers and leaders, and even more significant financial investments by both government and industry. Fortunately, thanks to Alberta's commitment to its Water for Life strategy, the province currently has both, and will reap tangible and meaningful benefits as a result.

In conclusion, is there a water crisis in Canada? In terms of having enough quality supplies to meet our demand — not yet. However, we are reaching a crisis point in our need to better understand how much water we really do have, how we use it and what actions we need to take to protect and sustain it.

Is Alberta's Water for Life perfect? No. But it is one of the best public policies of its kind at this time because it is bringing people together and driving action toward specific, clear and measurable goals.

Are Albertans doing everything they can to protect and sustain provincial water supplies? No again. But more and more they are working together, and under the guidance of the Water for Life strategy have stopped simply admitting the problems, and begun focusing on solutions.

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As this photo of members of Greenpeace hanging from the High Level bridge in Edmonton in November 2007 illustrates, many Canadians are concerned about how Alberta's oil sands affect water supplies. Yet, says Lorne Taylor, "rather than simply buying into the scare tactics of some environmental activists, the facts need to be examined as to what is really happening in the oil sands."

Ultimately, if we are to sustain Canada's water supplies, we *all* have to better understand how we use water as individuals, as communities and as consumers. Water management is not just a government problem or an industry problem. Rather it is one of the most important public policy issues facing the world today — with the key word in that phrase being "public."

To that end, through its approach, investment and commitment to a strategy like Water for Life, Alberta has embarked on a journey we can only hope others will follow.

Lorne Taylor is a consultant and businessman based in Medicine Hat, Alberta, and the current chair of the Alberta Water Research Institute. He served as Alberta's minister of science, research and information technology (1997-99), minister of innovation and science (1999-2001) and minister of the environment (2001-04). While in government, Dr. Taylor envisioned and led the creation of Alberta's Water for Life Strategy *and* Climate Change Action Plan.